

## EXECUTIVE SUMMARY

This Feasibility Study (FS) presents development, screening, and analysis of remedial alternatives for Operable Unit 8 (OU 8), Hill Air Force Base, Utah (Hill AFB). Operable Unit 8 is one of twelve operable units being investigated at Hill AFB, which was placed on the National Priorities List in July of 1987. Operable Unit 8 is a groundwater only operable unit comprised of a 600 acre contaminated groundwater plume in the shallow unconfined aquifer beneath the Base industrial area and the cities of Layton and Clearfield. This FS is a companion document to the *Final Remedial Investigation Report for Operable Unit 8, Hill AFB* (Montgomery Watson Harza, 2001) which contains details regarding the site physical characteristics, nature and extent of contamination, fate and transport of contaminants, and baseline risk assessment.

Contamination detected at OU 8 is primarily from historic releases of solvents and fuels originating in the industrial complex area of Hill AFB. Several remedial actions or corrective measures have already been implemented within the OU 8 area to remediate these sources and minimize the potential for further degradation of groundwater quality until a final remedy is selected for OU 8. These remedial actions include an interim action to contain contaminated groundwater at the southern Base boundary, implementation of the OU 3 and 7 Record of Decisions (RODs) to address several sources of contamination to groundwater, and implementation of corrective actions at Underground Storage Tank Sites ST35 (Building 280) and ST74 (Building 260).

Volatile Organic Compounds are the primary organic contaminants detected. Those most frequently detected above their respective Maximum Contaminant Levels (MCLs) include: trichloroethene, 1,2-dichloroethane, 1,1-dichloroethene, 1,1,1-trichloroethane, and chlorobenzene. The primary inorganic contaminants detected above their respective MCLs and associated with Hill AFB include hexavalent chromium, nickel, and lead in the vicinity of Building 225 and the Hill AFB Industrial Wastewater Treatment Plant.

The baseline risk assessment examined risks to human health under both current and possible future conditions on and off Base. Under current conditions, risks are within or below the  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$  potentially acceptable cancer risk range for all receptors. Cancer risk estimates were only within the  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$  range for on-Base workers in the vicinity of the former Berman Pond area with an estimated cancer risk of  $3 \times 10^{-6}$ . The hazard index estimates were less than 1 for all current use scenarios. Under potential future conditions, the estimate of the cancer risk exceeded  $1 \times 10^{-4}$  and/or the hazard index exceeded 1 for virtually all exposure scenarios evaluated due primarily to the potential use of the shallow groundwater as a source of drinking water. The low potential for this to actually occur must be considered in making risk management decisions for OU 8.

Based on the remedial investigation and baseline risk assessment results, remedial action objectives were developed for remediation of OU 8 groundwater. Separate remedial alternatives were developed for on- and off-Base groundwater at OU 8 for the following reasons:

- On-Base contaminated groundwater is contained at the southern Base boundary through the OU 8 IRA Hydraulic Containment System
- On-Base contaminated groundwater is entirely contained within Hill AFB boundaries
- Hill AFB is expected to remain under the jurisdiction of the Department of Defense, and therefore, Hill AFB can prevent use of contaminated groundwater on Base, thereby eliminating exposure pathways.

Separate Remedial Action Objectives (RAOs) also were developed for on- and off-Base groundwater. The RAOs for on-Base groundwater include:

- Prevent migration of on-Base groundwater with contamination above preliminary remediation goals (PRGs) to off-Base areas
- Prevent human exposure to contaminated groundwater above concentrations corresponding to an excess cancer risk between  $1 \times 10^{-4}$  and  $1 \times 10^{-6}$  and a chronic health risk defined by a hazard quotient of 1.

The RAOs for off-Base groundwater include:

- Prevent human exposure to contaminated groundwater above concentrations corresponding to an excess cancer risk between  $1 \times 10^{-4}$  and  $1 \times 10^{-6}$  and a chronic health risk defined by a hazard quotient of 1
- Protect uncontaminated groundwater for future use
- Reduce the mass of contaminants in shallow groundwater to PRGs within a reasonable timeframe.

Based on these RAOs, preliminary remediation goals and areas of attainment were defined for OU 8. To develop remedial alternatives consistent with the RAOs and PRGs, general response actions were identified, including no further action, institutional controls, containment, in-situ treatment, and collection/treatment/disposal. For each response action, technology types and process options were identified and screened for their potential use at OU 8 to achieve on- and off-Base RAOs. Once the technology types and process options were screened for applicability at OU 8, remedial alternatives were assembled for detailed analysis.

The five alternatives assembled for on-Base groundwater include No Further Action; Limited Action; Monitored Natural Attenuation (MNA); Pump and Treat Option 1; and Pump and Treat Option 2. For off-Base groundwater, the six assembled alternatives include No Action; Limited Action; MNA; Pump and Treat Option 1; Pump and Treat Option 2; and Pump and Treat Option 3. Each of these alternatives was then evaluated against seven of the nine criteria specified by the National Contingency Plan (NCP), which include: overall protection of human health and the environment; compliance with applicable or relevant and appropriate requirements; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. The remaining two NCP criteria, State acceptance and community acceptance, will be addressed following review of this document by regulatory agencies, and following a period of public comment on the remedial alternatives developed in this document.

Following an individual analysis of each alternative against these criteria, all of the on-Base alternatives were compared against each other in terms of how they met each criterion. The same process was followed for the off-Base alternatives.